

how to teach touch math

how to teach touch math is a critical skill for educators and parents looking to support students with foundational numeracy. This comprehensive guide will delve into the principles, strategies, and practical applications of the TouchMath program. We will explore why this multi-sensory approach is so effective, breaking down its core components and offering step-by-step guidance on implementing it across various math concepts. From understanding the touch points to applying them in addition, subtraction, multiplication, and division, this article will equip you with the knowledge to successfully teach TouchMath. We'll also discuss how to adapt it for different learning needs and measure student progress, ensuring a solid grasp of this impactful teaching methodology.

- Understanding the Core Principles of TouchMath
- The TouchPoints System: What They Are and How They Work
- Teaching Basic Number Recognition with TouchMath
- Implementing TouchMath for Addition
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Understanding the Core Principles of TouchMath

TouchMath is a highly effective, multi-sensory approach to teaching mathematics, particularly for students who struggle with abstract concepts. Its core philosophy centers on making numbers tangible and relatable through a system of visual, kinesthetic, and auditory cues. The program aims to build a strong foundation in number sense, which is crucial for all subsequent mathematical learning. By engaging multiple senses, TouchMath helps students develop a deeper understanding of numerical values and operations, moving beyond rote memorization to true comprehension. This systematic methodology ensures that learners can

visualize and physically interact with numbers, fostering confidence and reducing math anxiety.

The effectiveness of TouchMath lies in its ability to bridge the gap between abstract mathematical symbols and concrete understanding. It's designed to be accessible to a wide range of learners, including those with learning disabilities, such as dyscalculia, or students who benefit from a more hands-on learning experience. The program's structured progression allows educators to introduce concepts gradually, building upon prior knowledge and ensuring mastery at each stage. This focus on sequential learning and reinforcement is key to its success in developing strong mathematical skills.

The TouchPoints System: What They Are and How They Work

The cornerstone of the TouchMath program is its unique TouchPoints system. These are strategically placed dots on numerals that represent the quantity of the number itself. For instance, the number 3 has three touch points, the number 7 has seven touch points, and so on. These points are designed to be touched, traced, or even colored by the student as they count. This tactile engagement is vital for developing number sense and understanding the value of each digit. The visual and kinesthetic connection between the touch points and the numerical value solidifies the concept of quantity.

How the TouchPoints system works is quite intuitive. Students learn to associate each touch point with a count. When presented with a number, they physically touch each point while reciting the corresponding count. This process reinforces the one-to-one correspondence principle, a fundamental concept in early mathematics. The repetition of touching and counting the points helps to embed the numerical value into the student's memory through a multi-sensory pathway. This makes learning numbers feel less abstract and more concrete, particularly for younger learners or those who find traditional methods challenging.

The Visual Representation of TouchPoints

The visual aspect of TouchPoints is crucial. Each point is clearly marked and distinct, allowing students to easily identify and track them. The placement of these points on the numerals is also intentional, often following the natural stroke order for writing the number, which can also aid in numeral formation. This consistent visual cue acts as a constant reminder of the number's value, providing a visual anchor for understanding.

The Kinesthetic Engagement of Touching

The kinesthetic component, the act of physically touching the points, is perhaps the most powerful element of the TouchMath system. This tactile interaction engages fine motor skills and creates a physical connection to the abstract concept of numbers. Students can use their fingers, a pointer, or even a stylus to

touch the points, further enhancing the multi-sensory experience. This active participation makes learning more engaging and memorable.

Auditory Reinforcement and Counting

While primarily visual and kinesthetic, the TouchMath system also benefits from auditory reinforcement. As students touch the points, they are encouraged to count aloud. This vocalization of the numbers being touched further strengthens the learning process. The combination of seeing, touching, and saying the numbers helps to create a robust neural pathway for numerical understanding, making it more likely that the information will be retained.

Teaching Basic Number Recognition with TouchMath

Teaching basic number recognition is the initial step in implementing the TouchMath program. This involves familiarizing students with the numerals themselves and associating them with their correct quantities using the TouchPoints. The process begins with individual numbers, typically starting with 0 through 9. Educators guide students to identify each numeral and then to touch and count its corresponding TouchPoints. This repetition is key to building a strong foundational understanding of number values.

The goal is for students to eventually recognize numbers and their quantities without needing to touch every point. However, the initial stages rely heavily on this tactile and visual reinforcement. Using large, clear number cards with prominent TouchPoints is highly recommended. Activities can include tracing the numbers and their points, coloring the points, or matching numeral cards to sets of objects. The consistent application of the TouchPoints system during this phase sets the stage for more complex mathematical operations.

Introducing Numerals and Their TouchPoints

When introducing numerals and their TouchPoints, start with a small set, such as 0-5. Present the numeral, explain that the dots are called TouchPoints and represent the number's value. Guide the student to trace the number and then touch each point while counting aloud. Make it a game-like activity to keep young learners engaged. Gradually introduce more numbers as the student demonstrates understanding and confidence.

Activities for Reinforcing Number Recognition

A variety of activities can reinforce number recognition with TouchMath. These include:

- **Number Puzzles:** Matching numeral pieces with corresponding TouchPoint patterns.
- **Sensory Bins:** Hiding numeral cards with TouchPoints in sensory materials for students to find and count.
- **Playdough Mats:** Students form numbers with playdough on mats that have the TouchPoints printed on them.
- **Tracing Worksheets:** Providing worksheets where students trace numbers and their TouchPoints, emphasizing the tactile experience.
- **Counting Games:** Using dice with TouchPoints or card games that require matching numbers based on their TouchPoints.

Implementing TouchMath for Addition

Applying TouchMath to addition provides a concrete method for understanding the concept of combining quantities. When teaching addition with TouchMath, students utilize the TouchPoints on the addends to represent the numbers being combined. For example, to solve $3 + 4$, the student would touch the TouchPoints on the 3 and then continue counting and touching the TouchPoints on the 4. This physical act of counting on from the first number to the second solidifies the process of addition.

The strategy involves identifying the larger addend and starting the counting-on process from there. This is a key efficiency skill taught within TouchMath to make addition more manageable. The student touches the TouchPoints on the larger number and then counts on using the TouchPoints of the smaller number, marking each count. The final number reached is the sum. This method bypasses the need to count all numbers from the beginning each time, promoting faster and more accurate computation.

Step-by-Step Addition with TouchPoints

Here's a step-by-step approach to teaching addition using TouchMath:

1. Present an addition problem, such as $5 + 3$.
2. Identify the larger addend (5) and have the student touch all the TouchPoints on the numeral 5.
3. Instruct the student to count on from 5, touching the TouchPoints on the numeral 3, one at a time: "six, seven, eight."

4. The final count (8) is the sum.
5. Reinforce by writing the equation and the answer ($5 + 3 = 8$).

Addition Strategies with TouchMath

TouchMath also incorporates strategies for more efficient addition, such as:

- **Counting On:** As described above, starting with the larger number.
- **Doubles and Near Doubles:** Practicing addition facts like $4+4$ by touching the points on both fours and counting on.
- **Making Tens:** Using TouchPoints to visually and kinesthetically demonstrate how to make a ten with given numbers, a crucial skill for addition.

TouchMath Strategies for Subtraction

Subtraction, often perceived as more challenging than addition, is made accessible through TouchMath's systematic approach. When teaching subtraction with TouchMath, the core idea is to start with the quantity of the first number (the minuend) and then "take away" the quantity of the second number (the subtrahend) by touching and counting backward. This provides a concrete representation of the process of removing items from a set.

The strategy involves identifying the minuend and touching its TouchPoints. Then, the student counts backward, touching the TouchPoints corresponding to the subtrahend. For example, to solve $9 - 4$, the student would touch the TouchPoints on the 9 and then count backward four times, touching the points: "eight, seven, six, five." The final number reached represents the difference. This backward counting using the tactile points helps students conceptualize the act of taking away.

The Process of Subtracting with TouchPoints

The typical process for subtraction with TouchMath is as follows:

1. Present a subtraction problem, for instance, $7 - 3$.

2. Have the student touch all the TouchPoints on the numeral 7.
3. Instruct the student to count backward, touching the TouchPoints on the numeral 3: “six, five, four.”
4. The final count (4) is the difference.
5. Record the answer ($7 - 3 = 4$).

TouchMath Techniques for Subtraction Problems

Key techniques for subtraction using TouchMath include:

- **Backward Counting:** The fundamental method of touching and counting down.
- **Number Lines with TouchPoints:** Using a number line where each number has its TouchPoints, allowing students to physically move backward on the line.
- **Fact Families:** Demonstrating the relationship between addition and subtraction using TouchPoints to reinforce number bonds.

Applying TouchMath to Multiplication

Multiplication, representing repeated addition, can also be effectively taught using TouchMath. The program helps students visualize and perform multiplication by breaking it down into manageable steps. The core idea is to use the TouchPoints to represent the number of groups and the number of items in each group. This transforms the abstract concept of multiplication into a concrete counting process.

For example, to solve 3×4 , a student would identify that there are 3 groups of 4. They would then touch the TouchPoints on the number 4 three times. The process would be to touch all the TouchPoints on the 4, count them (1-4), then move to the next set of 4 and touch its TouchPoints (5-8), and finally move to the third set of 4 and touch its TouchPoints (9-12). The total count (12) is the product. This repeated application of the TouchPoints reinforces the concept of repeated addition.

Visualizing Multiplication with TouchPoints

The visual aspect of multiplication with TouchMath is crucial for understanding. Teachers can use manipulatives like counters or blocks alongside the TouchMath numerals to represent the groups and items. Students can physically group the TouchPoints or use them as a reference point for counting the items within each group. This multi-sensory approach makes the concept of repeated addition concrete and easier to grasp.

Step-by-Step Multiplication Using TouchPoints

The execution of multiplication with TouchMath typically follows these steps:

1. Present a multiplication problem, such as 2×5 .
2. Identify the number of groups (2) and the number in each group (5).
3. Instruct the student to touch all the TouchPoints on the number 5 (representing the first group).
4. Then, have them count on by touching the TouchPoints on the second 5 (representing the second group).
5. The total count is the product.

Using TouchMath for Division

Division, representing the sharing or grouping of quantities, is also made tangible with TouchMath. The program can help students understand division as either repeated subtraction or as equal sharing. The TouchPoints serve as a guide for distributing items into equal groups or for repeatedly subtracting a number until zero is reached.

For instance, to solve $12 \div 3$, the student needs to determine how many groups of 3 can be made from 12, or how to divide 12 into 3 equal groups. Using TouchMath, one method is to start with the total quantity (12) and repeatedly subtract 3. The student would touch the TouchPoints on 12 and then count backward 3 times (touching points): “eleven, ten, nine.” This counts as one group of 3 taken away. They continue this process until they reach zero, counting how many times they performed the subtraction. Each backward count sequence represents a group.

Division as Equal Sharing with TouchPoints

To teach division as equal sharing, such as $10 \div 2$, the student would aim to distribute 10 items into 2 equal groups. They would use the TouchPoints on the number 2 to count out items for each group. For example, give one item to each of the two groups (using the first two TouchPoints of the 2), then the next two items (using the next two TouchPoints of the 2), and so on, until all 10 items are distributed. Counting how many items are in each group, or how many times they distributed items, helps understand the division outcome.

Division as Repeated Subtraction with TouchPoints

The repeated subtraction method for division with TouchMath is a direct application of subtraction principles:

1. Present a division problem, for example, $15 \div 5$.
2. Start with the dividend (15) and touch its TouchPoints.
3. Count backward, touching the TouchPoints on the divisor (5). This signifies taking away one group of 5.
4. Continue this backward counting process, keeping track of how many times the subtraction is performed.
5. The number of times the subtraction is performed is the quotient.

Adapting TouchMath for Diverse Learners

TouchMath's multi-sensory nature makes it inherently adaptable for a wide range of learners, including those with specific learning needs. For students with visual impairments, larger TouchPoints, tactile numerals, and auditory cues can be emphasized. Conversely, for students with fine motor skill challenges, larger TouchPoints that are easier to manipulate or using a finger pointer can be beneficial. The program's flexibility allows educators to tailor the approach to individual student requirements.

Students with attention deficits often benefit from the engaging, hands-on nature of TouchMath, as it keeps them actively involved in the learning process. The structured, sequential presentation of concepts also helps maintain focus. For students with dyscalculia, the concrete representation of numbers and operations provided by TouchPoints is particularly effective in overcoming the difficulties they experience with abstract mathematical concepts. The program's ability to build confidence through mastery at each step is

invaluable for these learners.

Supporting Students with Learning Disabilities

For students identified with learning disabilities, such as dyslexia or dysgraphia, TouchMath can be a significant support. The tactile and visual reinforcement helps bypass challenges with rote memorization and abstract thinking. Breaking down complex problems into smaller, manageable steps, each reinforced with TouchPoints, reduces cognitive load and promotes success. Consistent practice and positive reinforcement are key when working with these students.

Differentiating Instruction with TouchMath

Differentiating instruction with TouchMath involves varying the complexity of the problems, the pace of instruction, and the types of support provided. Some students may progress quickly through number recognition and move to addition, while others may need more time with the foundational skills. Providing a range of manipulatives, varying the size and texture of TouchPoints, and offering opportunities for peer tutoring are all effective differentiation strategies.

Assessing Student Progress in TouchMath

Assessing student progress in TouchMath involves observing their ability to accurately apply the TouchPoints system to recognize numbers and perform operations. This can be done through a combination of informal observations during activities and more formal assessments. Educators should look for accuracy in touching and counting the points, the speed at which students can perform calculations without relying solely on the points, and their understanding of the underlying mathematical concepts.

Regular check-ins are essential. This could involve asking students to solve problems verbally while demonstrating the TouchPoints, or having them complete worksheets that require the application of the system. As students become more proficient, assessments should gradually shift to evaluating their ability to perform calculations mentally or with less reliance on the tactile elements, indicating a true internalization of the math concepts. The goal is to transition students from external aids to internal understanding.

Methods for Observing and Recording Progress

Effective methods for assessing progress include:

- **Anecdotal Notes:** Keeping brief notes on student performance during lessons, noting specific strengths and areas needing further support.

- **Work Sample Analysis:** Reviewing completed worksheets and activities to identify patterns of errors or mastery.
- **Checklists:** Using skill-based checklists to track proficiency in number recognition, addition, subtraction, and other operations.
- **One-on-One Conferences:** Discussing their understanding and strategies with students to gauge their conceptual grasp.

Transitioning Away from TouchPoints

The ultimate aim of TouchMath is not for students to rely on the TouchPoints indefinitely, but rather to use them as a scaffold to build strong number sense and computational fluency. The transition away from constant TouchPoint use should be gradual and based on student readiness. This might involve using TouchPoints only for challenging problems, using them mentally, or moving towards abstract calculation as understanding solidifies. The focus remains on building confidence and ensuring that the underlying mathematical skills are well-developed.

Frequently Asked Questions

What are the core principles of the TouchMath program?

TouchMath's core principles revolve around using tactile and visual cues (the 'TouchPoints') to help students understand number concepts and develop math fluency. It emphasizes multi-sensory learning, breaking down complex math into manageable steps, and building a strong conceptual foundation before moving to abstract procedures.

How does TouchMath address different learning styles in teaching numbers?

TouchMath is designed to be highly adaptable to various learning styles. The tactile TouchPoints appeal to kinesthetic learners, while the visual representation of the dots and the sequence of counting cater to visual learners. Auditory learners benefit from the verbalization of the counting process and the systematic approach.

What are the key benefits of using TouchPoints in teaching basic addition

and subtraction?

TouchPoints provide a concrete way for students to visualize and manipulate numbers. For addition, they count up from the larger number, touching each TouchPoint sequentially. For subtraction, they count backward. This method helps build number sense, reduces reliance on rote memorization, and fosters understanding of the 'how' and 'why' behind the operations.

What are common challenges educators face when introducing TouchMath and how can they overcome them?

A common challenge is ensuring consistent application of the TouchPoints. Educators can overcome this by practicing the method themselves, providing clear demonstrations, and encouraging consistent use across all math activities. Another challenge might be student resistance to a new method, which can be addressed by highlighting the benefits, making learning engaging, and celebrating early successes.

How can TouchMath be integrated into a broader math curriculum beyond basic operations?

TouchMath's principles can be extended to teach more advanced concepts. For multiplication, students can 'touch and count' by groups. For division, they can use TouchPoints to represent the dividend and share it into equal groups. The focus on number sense and conceptual understanding can also support learning fractions, decimals, and even early algebraic thinking by reinforcing the value and relationships between numbers.

Additional Resources

Here are 9 book titles related to teaching Touch Math, with descriptions:

1. *Instructional Strategies for TouchMath: A Practical Guide*

This book offers educators a comprehensive overview of effective strategies for implementing the TouchMath program. It delves into the foundational principles of the program and provides step-by-step guidance for introducing and reinforcing number concepts using the touch-counting system. Teachers will find practical tips, differentiated instruction ideas, and reproducible activities to support diverse learners.

2. *The TouchMath Toolkit: Mastering Numeration and Computation*

Designed as a hands-on resource, this title provides teachers with the essential tools to teach TouchMath effectively. It focuses on building a strong understanding of number sense, place value, and basic arithmetic operations. The book includes visual aids, manipulatives, and engaging activities that make abstract mathematical concepts concrete for students.

3. *Sensory Learning with TouchMath: Engaging Young Minds*

This book explores the benefits of using tactile and kinesthetic learning methods, with a particular focus on the TouchMath approach. It highlights how engaging multiple senses can significantly improve a child's comprehension and retention of mathematical skills. The content is geared towards early childhood educators and parents looking to make math fun and accessible.

4. TouchMath for Struggling Learners: Bridging the Gap in Math Achievement

This resource specifically addresses the needs of students who find traditional math instruction challenging. It presents modified TouchMath techniques and strategies tailored to support students with learning disabilities or those who require additional scaffolding. The book offers clear, concise explanations and a systematic approach to building math fluency.

5. Early Math Foundations with TouchMath: Building Number Sense from the Start

This title is an excellent starting point for educators and parents introducing foundational math concepts. It explains how the TouchMath system can be used to teach number recognition, counting, and basic addition and subtraction to young children. The book emphasizes a gentle, progressive approach to building a positive relationship with mathematics.

6. The Art of Teaching TouchMath: Creative Approaches and Problem Solving

Moving beyond basic instruction, this book explores creative and innovative ways to teach the TouchMath curriculum. It provides teachers with engaging lesson ideas, games, and real-world applications to enhance student motivation and understanding. The focus is on developing problem-solving skills and fostering deeper mathematical thinking through the TouchMath framework.

7. TouchMath in Action: Classroom Case Studies and Success Stories

This book showcases the practical application of TouchMath through real-world examples and testimonials. It features case studies demonstrating how the program has positively impacted student learning and achievement in various classroom settings. Educators can gain inspiration and insights from the documented successes of implementing TouchMath.

8. Differentiated Instruction Using TouchMath: Catering to Individual Needs

Recognizing that students learn at different paces, this book provides guidance on differentiating instruction within the TouchMath program. It offers strategies for adapting lessons and activities to meet the diverse needs of all learners, including those who are gifted, at-risk, or have specific learning profiles. The emphasis is on creating an inclusive and effective math learning environment.

9. TouchMath: From Concrete to Abstract Thinking in Mathematics

This title examines the developmental progression of mathematical understanding facilitated by the TouchMath system. It explains how the program's concrete, visual, and tactile components help students transition from early number concepts to more abstract mathematical reasoning. The book is valuable for educators seeking to understand the underlying pedagogical principles that make TouchMath so effective.

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